tion ever witnessed at one of these assemblies. As the applause subsided, Prof. Donders, the president of the congress, stepped forth and said:—"Professor Lister, it is not only our admiration which we offer you; it is our gratitude, and that of the nations to which we belong."

The book concludes with an account of Lister's antiseptic technique, and the reasons on which it was based. This, in many respects admirable, is unnecessarily polemical. Like Dr. Wrench, I have no patience with those who would belittle the discoveries of Lister because it may be possible to attain the same end by a modification of his method; but the torrent of irony poured upon those surgeons who prefer to sterilise their dressings and tools by steam instead of by chemical means, or to adopt a number of precautions not found necessary by Lister, is, surely, uncalled for

The elaborate equipment of the modern operating theatre is not, as many suppose, essential, but it is very convenient. The danger is that, by its obtrusive array of apparatus for sterilisation, the surgeon as well as the student may forget that it is impossible to sterilise the skin of the patient, so that it is, as Lister found, wiser to have a second line of defence in the form of an antiseptic dressing, which, although it may not destroy all the microbes in the area of operation, paralyses their activity until the wound has had time to close.

C. J. MARTIN.

SPECIALISED CHEMICAL TEXT-BOOKS.

(1) *Gas Analysis.* By Prof. L. M. Dennis. Pp. xvi+434. (New York: The Macmillan Co.; London: Macmillan and Co., Ltd., 1913.) Price 9*s*. net.

(2) *The Chemistry of Rubber.* By B. D. Porritt. Pp. vii+96. (London: Gurney and Jackson, 1913.) Price 1*s*. 6*d*. net.

(3) *An Introduction to the Chemistry of Plant Products.* By Dr. Paul Haas and T. G. Hill. Pp. xii+401. (London: Longmans, Green and Co., 1913.) Price 7*s*. 6*d*. net

(4) *Grundriss der Fermentmethoden. Ein Lehrbuch für Mediziner, Chemiker, und Botaniker.* By Prof. Julius Wohlgemuth. Pp. ix+355. (Berlin: J. Springer, 1913.) Price 10 marks.

(1) GAS analysis enters into almost every branch of chemical work, and there is therefore no need to emphasise the importance of a standard work on the subject. Prof. Dennis began his book as a second edition of the English translation of Hempel's famous "Methods of Gas Analysis," but the inclusion in it of the advances made during the last fourteen years has turned it into a new book. Procedures for the determination of most of the common gases are given in considerable detail, but the book is rightly devoted mainly to rapid methods of technical gas analysis, including the determination of heating power as well as of quantity. The opening sections, occupying about one-third of the book, treat in turn of the collection, storage, measurement, and other manipulation of gases. The various forms of apparatus devised for gas analysis are described, a variety of important practical details being included. After describing fully the methods of analysis of the various simple gases, chapters are devoted to the investigation of flue gas, illuminating gas, acetylene, and air. Although remarkably complete, the book is not exhaustive; for example, no reference is made to Bone and Wheeler's valuable apparatus, first described in 1908. Only one of the automatic carbon dioxide recorders is described, whereas there are others on the market equally if not more satisfactory. However, these are only minor blemishes on a work which is likely to be widely used.

(2) Mr. Porritt is to be complimented on having compressed within narrow limits a very complete and readable account of the chemistry of rubber. His book can scarcely fail to be of great value to all who master it, and it should be of considerable service to those directly interested in the industry. As a practical man, the author is fully alive to the complexities of the problem presented by rubber, and his account of the advanced chemistry of its structure is combined happily with the more practical details of its working.

The first chapter deals with the properties of crude rubber, directing attention to its constituents and such properties as tackiness and perishing, which require scientific investigation, so that they may be prevented in the future. A neat summary is given of the chemical constitution of rubber and of its synthetic imitations. Sections 3 and 4 describe the process of vulcanisation and the various theories which have been put forward to explain it. We read with interest that Hancock, the first to utilise the process in England about 1842, conducted experiments from which any kind of scientific method was conspicuously absent! He was nevertheless successful! Although Mr. Porritt's book assures us that this is not the method of procedure in 1913, we cannot help feeling that if, a few years ago when money was plentiful in the industry, the plantation companies had endowed properly scientific research on rubber, they would not now be complaining of the unsatisfactory price which their product realises as compared with the wild article. The subject of synthetic rubber is fully treated, though no optimistic opinion is expressed as to its com-

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mercial success in the near future. The book ends with a bibliography giving 179 references to the original literature.

(3) The title of this work very accurately represents its contents; it is in no sense a text-book of plant chemistry, though it is intended for students of vegetable physiology. The plan adopted by the authors is to single out various groups of substances because they occur in plants, and to give some idea of their chemistry. Reference is usually made to the mode of occurrence of the particular compound, and occasionally to its biological significance or economic importance. From the point of view of the botanist, especially the junior student, the result is a valuable compilation of facts which were previously only to be found widely scattered. The authors are to be congratulated on the extent of their reading and the large amount of pertinent matter which they have introduced, much of which has not hitherto been found in text-books.

Viewed, however, from a somewhat higher standard of criticism, the book is disappointing. It lacks stimulus and feeling, both on the chemical and on the botanical side, and although informative it is not sufficiently critical to guide the user on just those questions where he needs information. If chemistry is to be of real aid to the biologist, he must realise its broader issues and acquire some chemical feeling. This it is impossible to gain from a book dealing with the reactions and properties of selected substances, and the introduction of such methods of teaching chemistry to biologists is to be deprecated on all grounds.

The writers are at their best in some of the more advanced sections, those dealing with the tannins and with plant pigments being admirably done. The other chapters are devoted to fats, carbohydrates, glucosides, nitrogen bases, colloids, proteins, and enzymes.

(4) Dr. Wohlgemuth in his preface claims to have collected together all the experimental methods which are of use for the study of enzymes, but we fear he will find it difficult to establish his claim. Indeed, the book is disappointingly superficial, the more so as there is a real need for it just at present. Many of the best and most generally used processes are entirely ignored, and there are far too many inaccuracies and loose statements. In particular, the author appears to have paid no attention at all to the very large bulk of English and American work on the subject, either in the original or in the excellent abstracts in the German journals which must have been available to him.

The carbohydrate enzymes are very incompletely treated, and the same applies to diastase. The estimation of this enzyme is so important for the brewing industry that it has been very thoroughly studied, and methods of great accuracy have been elaborated, for which we look in vain. Emulsin scarcely receives mention, in spite of its importance in plant physiology, and of the newer work on it we find not a trace. The information about urease is equally scanty. The author is more lengthy and presumably more at home on the pathological side of the subject, and he appears to cater specially for medical men who propose to make the detection of enzymes of advantage in diagnosis. It is desirable to emphasise the danger of this practice—the technique of enzyme identification is not easy, and insufficiently qualified workers are prone to obtain misleading results. Physiological chemical literature is already burdened with so much that is incorrect that no encouragement should be given to practices which are likely to lead to a continuance of the evil.

E. F. A.

THE REGULATION OF NAVIGABLE RIVERS.

The Improvement of Rivers. By B. F. Thomas and D. A. Watt. In two volumes. Pp. xv+749+76 plates. (New York: John Wiley and Sons, Inc.; London: Chapman and Hall, Ltd., 1913.) Price 31*s.* 6*d.* net.

THIS is the second edition of a book published in New York in 1903. The authors are assistant engineers in the service of the United States, and have drawn to a considerable extent on their personal experience of works carried out in that country. The subjects dealt with are:—Chap. i., The characteristics of rivers; ii., Regulation of river channels; iii. and iv., Dredging and Snagging; v., Embankments and their protection; vi., Levees; vii., Storage reservoirs; viii., The improvements of the outfalls of rivers. The second part relates principally to the canalisation of rivers. Tidal rivers are not dealt with.

The text is accompanied by a great number of illustrations explanatory of the works described. These two volumes contain much useful information relating to the subject dealt with, and are well worth the study of engineers engaged in this class of work.

The authors direct attention to a fact that should be borne in mind by engineers engaged in river training, that experience has shown that although water is a fluid element without cohesion, influenced by the laws of gravitation, yet it cannot be made to flow in any desired direction unless the training works are carried out subject to rules

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